REMARKS

Claims 1-16 are pending in the instant application. Claims 2, 3, 5-12, 15, and 16 are withdrawn from consideration, as they are drawn to non-elected subject matter. Claims 1, 4, 13, and 14 stand rejected. None of the claims stand objected to. The Applicants herein cancel Claim 4 without prejudice or disclaimer to the subject matter contained therein. Claims 1, 13, and 14 have been amended to clarify the instant invention. These amendments find support in the as-filed specification and claims. The specification has been amended to correct obvious typographical errors. No new matter is introduced by the above amendments.

DRAWINGS

As is permitted under MPEP 608.02(p), the Applicants will defer submitting corrected drawings until such time that allowable subject matter is indicated.

DOUBLE PATENTING

Claims 1, 4[1], 13, and 14 stand provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claims 1, 4, and 13 of the Applicant's co-pending Application No. 08/820,519. It is noted for the Examiner that the Applicants have abandoned co-pending Application No. 08/820,519, as evidenced by the attached copy of the Notice of Abandonment mailed by Examiner Duffy on November 9, 1998.

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[1] Although it is stated in the Office Action that Claim 3 stands rejected, the Applicants assume that the Examiner intended to reject Claim 4, which is directed to the disclosed polypeptide ligands. Claim 3, which is drawn to polynucleotides, has been withdrawn from consideration.

Accordingly, the Applicants respectfully request reconsideration and withdrawal of this obviousness-type double patenting rejection.

CLAIM REJECTIONS UNDER 35 U.S.C. §101

Claims 1, 4, 13, and 14 stand rejected under 35 U.S.C. §101 because the claimed invention is allegedly directed to non-statutory subject matter. The Examiner indicates that the claimed polypeptides are deemed be products of nature, because the claims fail to recite language such as "isolated and purified," which would indicate involvement of the "hand of man" in the production of the claimed polypeptides. In response to this rejection, the Applicants have amended Claims 1, 13, and 14 to recite, respectively: "An isolated polypeptide . . ." These claim amendments find support on page 6, lines 12-18, the specification, which defines "isolated" polypeptides as those that are separated from the coexisting materials of its natural state. Claim 4 has been cancelled without prejudice or disclaimer. In light of these claim amendments, the Applicants respectfully request reconsideration and withdrawal of the rejection of Claims 1, 13, and 14 under 35 U.S.C. §101.

CLAIM REJECTIONS UNDER 35 U.S.C. §112, FIRST PARAGRAPH

Claim 1 stands rejected under 35 U.S.C. §112, first paragraph, as allegedly containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed subject matter. The Examiner indicates that the specific sequences of the polypeptides recited in the instant claims meet the written description requirement of 35 U.S.C. §112, first paragraph. However, she argues that the specification does not have the requisite written description for sequences that have a cited degree of identity to the disclosed polypeptide sequences. Specifically, the Examiner maintains that, in the absence of a written

description of the algorithm and specific parameters employed, the specification lacks adequate written description of sequences encompassed by percent identity language.

Solely for the purposes of advancing the prosecution of this application, and not acquiescing to this rejection, the Applicants herein amend Claim 1 so as to remove the recitation of percent identity from the claim. The Applicants submit that Claim 1, as amended, satisfies the written description requirement of section 112, first paragraph. In light of these amendments, the Applicants respectfully request reconsideration and withdrawal of the rejection of Claim 1 under 35 U.S.C. §112, first paragraph.

Claims 1, 4, 13, and 14 stand rejected under 35 U.S.C. §112, first paragraph, as allegedly containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. For the reasons set forth above, the Applicants submit that the removal of a recitation of percent identity from Claim 1 obviates this rejection. If this rejection is based on the fact that as-filed Claim 1 claimed polypeptides with a recited percent identity to the disclosed polypeptides, the Applicants point out that Claims 13 and 14 claim the disclosed sequences *per se* and contain no recitation of percent identity. Accordingly, the Applicants respectfully request reconsideration and withdrawal of the rejection of Claims 1, 13, and 14 under 35 U.S.C. §112.

On page 6 of the Office Action, the Examiner opines that the HFGAN72 receptor is neither described in the specification, nor is published in the art such that the skilled artisan would be readily apprised of what receptor HFGAN72 represents. The Applicants respectfully disagree with these statements and point out that the HFGAN72 receptor is referenced on page 3, lines 28-31 of the specification, which states: "Polypeptides and polynucleotides encoding the human 7-transmembrane G-protein coupled neuropeptide receptor, HFGAN72, have been

identified and are disclosed in U.S.S.N. 08/846,704 and 08/846,705, both of which were filed on April 30, 1997, as well as in WO 96/34877, published on November 7, 1996. Furthermore, page 41, lines 1-4 of the specification provides: "All publications, including, but not limited to, patents and patent applications, cited in this specification, are herein incorporated by reference. . . ." The HFGAN72 receptor was known and published before the filing date of the instant application. In the PCT application WO 96/34877, which is filed herewith in an accompanying Form 1449, the polypeptide sequence of the HFGAN72 receptor is set forth in SEQ ID NO:2. Moreover, the sequence of the HFGAN72 receptor was later referred to by the Applicants in "Orexins and Orexin Receptors: A Family of Hypothalamic Neuropeptides and G Protein-Coupled Receptors that Regulate Feeding Behavior," Sakurai, *et al.*, *Cell* 92: 575-585 (1998) (copy enclosed). In particular, the Examiner's attention is directed to the paragraph bridging pages 573 and 574 of Sakurai, *et al.*, which discusses the HFGAN72 receptor, the sequence of which is set forth in Figure 2C[2]. Therefore, the Applicants submit that the HFGAN72 receptor was known in the art at the time the instant application was filed, such that the skilled artisan would have been able to practice the screening assays disclosed, but not claimed, in the instant application.

The Examiner further alleges that, in regard to Claims 1, 4, 13, and 14, the specification provides no guidance as to "how to use" the polypeptides of the instantly claimed SEQ ID NOs

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[2] It is noted for the Examiner that Sakurai, *et al.* refer to the HFGAN72 receptor as the human orexin 1 receptor throughout the reference, as well as in Figure 2C. The terms HFGAN72 receptor and human orexin 1 receptor are used synonomously throughout this article and by those of ordinary skill in the art. In Figure 2C, the HFGAN72 receptor appears as the first amino acid sequence in the alignment.

because it is not known or disclosed what diagnostic or clinical uses these polypeptides have. She further posits that the specification provides no disease which has aberrant levels of the disclosed ligands such that it could in fact be diagnostic of any disease or be administered to provide a treatment.

The Applicants respectfully traverse this ground of rejection. It is respectfully submitted that the instant specification contains significant physiological and biological data regarding the function of the disclosed polypeptide ligands. For instance, on page 22, lines 8-19 of the specification, the Applicants provide:

> Example 5 shows that central administration of Lig 72A (SEQ ID NO: 8) stimulated food intake in freely-feeding rats during a 4 hour time period. This increase was approximately four-fold over control rats receiving vehicle. These data suggest that Lig 72A may be an endogenous regulator of appetite. Therefore, antagonists of its receptor may be useful in the treatment of obesity and diabetes, while agonists or antagonists may be useful in the treatment of eating disorders such as anorexia nervosa, bulimia, and cachexia, among others.
>
> Moreover, Example 6 shows that Lig 72A (SEQ ID NO: 8) induced antidiuresis when infused intravenously in the conscious rat, without affecting systemic or renal hemodynamics. These data also suggest that an HFGAN72 receptor antagonist would possess novel diuretic activity and, therefore, may be useful in the treatment of chronic renal failure, Type II diabetes, renal disease, congestive heart failure, impaired glucose tolerance, obesity, and sexual dysfunction, among others.

Therefore, contrary to the Examiner's assertions, the Applicants submit that they have enumerated a list disease states, supported by the disclosed *in vivo* data, in which the binding of the disclosed ligands to the HFGAN72 receptor is believed to play a role. Based on the level of disclosure in the specification, the Applicants submit that they teach that the disclosed ligands can be used for both diagnostic and therapeutic purposes, among others. Moreover, as the Applicants note in the specification at page 3, lines 14-27: "Over the past 15 years, nearly 350 therapeutic agents targetting 7 transmembrane (7 TM) receptors or their ligands have been successfully introduced onto the market. This indicates that these receptors and their ligands have an established, proven history as therapeutic targets."

The Applicants point out that the instant specification enumerates many uses for the claimed polypeptides, and the Applicants are claiming these polypeptides for all of the disclosed uses. For example, as discussed throughout the instant specification, the claimed polypeptides can be used for purposes including, but not limited to: drug screening to identify agonists and antagonists of their interaction with the HFGAN72 receptor, antibody production, and as probes for diagnostic purposes, among other applications.

In view of the foregoing remarks and the claims as amended, the Applicants respectfully request reconsideration and withdrawal of all of the stated grounds of rejection of Claims 1, 13, and 14 under 35 U.S.C. §112, first paragraph.

CLAIM REJECTIONS UNDER 35 U.S.C. §112, SECOND PARAGRAPH

Claims 1 and 4 stand rejected under 35 U.S.C. §112, second paragraph, as being allegedly indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicants regard as the invention. Claim 4 has been cancelled without prejudice or disclaimer.

First, the Examiner maintains that, due to the fact that SEQ ID NOs:3, 8, and 11 are identical for the human, rat, and mouse, respectively, such that the recitation of all three SEQ ID NOs in Claim 1 is redundant. In response, the Applicants herein amend Claim 1 to delete the recitation of SEQ ID NOs:3 and 11.

Second, the Examiner states that Claim 1 contains an improper Markush group that includes hyphens. As she suggests, the Applicants herein amend Claim 1 so as to remove all hyphens from the recited Markush group.

Third, with respect to Claim 1, the Examiner alleges that the recitation of "at least 80% identical over its entire length" is vague and indefinite in the absence of a clear description or

definition of what the term means. Solely for the purpose of advancing the prosecution of this application, rather than acquiescing to this rejection, the Applicants herein amend Claim 1 to delete the recitation of "at least 80% identical over its entire length."

As the Applicants believe that these amendments of Claims 1, 13, and 14 obviate all of the grounds of rejection under 35 U.S.C. §112, second paragraph, reconsideration and withdrawal of this rejection is respectfully requested.

The Applicants reserve the right to prosecute, in one or more patent applications, the canceled claims, the claims to non-elected inventions, the claims as originally filed, and any other claims supported by the specification. Any amendments made herein to the claims were made to solely expedite or otherwise facilitate prosecution and were not made, nor should they be construed to have been made, to overcome any issue of unpatentability of the claims as they existed prior to such amendments, nor do such amendments limit the scope of equivalents of the claims.

The Applicants thank the Examiner for the Office Action and believe this response to be a full and complete response to such Office Action. Accordingly, favorable reconsideration and allowance of the pending and new claims is earnestly solicited.

If it would expedite the prosecution of this application, the Examiner is invited to confer with the Applicants' undersigned attorney.

Respectfully submitted,

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